

Seung Hwan Cho
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EDUCATION

Ph. D. in Organic Chemistry, KAIST	2006 – 2011
B. S. in Chemistry, KAIST	2001– 2005

PROFESSIONAL EXPERIENCE

Department of Chemistry, POSTECH <i>Professor</i>	2024.09 – present
Department of Chemistry, POSTECH <i>Associate Professor</i>	2018.09 – 2024.08
Department of Chemistry, POSTECH <i>Assistant Professor</i>	2014.07 – 2018.08
Department of Chemistry, University of California, Berkeley <i>Postdoctoral Fellow (with Professor John F. Hartwig)</i>	2012 – 2014
Department of Chemistry, KAIST <i>Postdoctoral Fellow (with Professor Sukbok Chang)</i>	2011 – 2012
Department of Chemistry, KAIST <i>Researcher (with Professor Sukbok Chang)</i>	2005 – 2006

AWARDS AND HONORS

<i>"POSTECH Young Distinguished Professor"</i> POSTECH	2023
<i>"Toray Research Grant for Young Investigator"</i> Korea Toray Science Foundation	2022
<i>"Hanseong Science Award"</i> Hanseong Sonjaehan Foundation	2022
<i>"Young Organic Chemist Award"</i> Division of Organic Chemistry, Korean Chemical Society (KCS)	2021

<i>"KCS-Wiley Young Chemist Award"</i>	2020
Korean Chemical Society (KCS)	
<i>"The Best Teaching Award (우수강의상)"</i>	2018, Spring
Department of Chemistry, POSTECH	
<i>"Young Korean Academy of Science and Technology (Y-KAST)"</i>	2018
Korean Academy of Science and Technology (한림원)	
<i>"Thieme Journal Award"</i>	2017
Synlett/Synthesis/Synfact Award for Young Investigator	
<i>"TJ Park Cheongam Science Fellowship for Young Investigator"</i>	2017
Cheongam (POSCO) Foundation	
<i>"Selected One of Outstanding Young Scientists in Korea"</i>	2016
POSTECH, Dong-A Ilbo	
<i>"Best Thesis Award"</i>	2012
Korea University President Association (한국 과학재단), Korean Academy of Science and Technology (한림원) and S-oil	
<i>"TJ Park Cheongam Science Fellowship for PostDoc"</i>	2012
Cheongam (POSCO) Foundation	
<i>"Best PhD Thesis Award"</i>	2011
Korean Chemical Society (KCS)	
<i>"Best PhD Thesis Award"</i>	2011
KAIST	
<i>"Thieme SYNStar Award"</i>	2010
Synlett/Synthesis/Synfact Student Award	
<i>"National Graduate Student Science and Technology Scholarship"</i>	2009
National Research Foundation of Korea (NRF)	
<i>"Award for Excellence in Graduate Research"</i>	2009
KAIST	

EDITORIAL ADVISORY BOARD MEMBER OF JOURNALS

<i>Green Synthesis and Catalysis</i> (Editorial Board Member)	2022- present
<i>ACS Catalysis</i> (Early Career Advisory Board)	2019-2021

PUBLICATIONS

59. Jung, Y.; Kim, J.; Ko, J.; Han, S.; Hong, S.*; **Cho, S. H.*** "Stereospecific and Stereodivergent Allyl-Allyl Coupling: Construction of Vicinal Tertiary and All-Carbon Quaternary Stereocenters" submitted
58. Kim, M.; Kim, K.; Kim, D.; **Cho, S. H.*** "Copper-Catalyzed Regio-,Diastereo-, and Enantioselective Allylic Alkylation with 1,1-Diborylalkanes" *J. Am. Chem. Soc.* in revision
57. Hwang, C.; Jang, Y.; Jung, Y.; Shin, K.; **Cho, S. H.*** "Diverse Synthesis of (Thio)ethers and (Thio)esters Using Halo-Diborylmethane as a Transformable C₁ Building Block" *Org. Lett.* **2024**, *26*, 7010.
56. Jin, Y.; Lee, J.; Jo, W.; Yoo, J.; **Cho, S. H.*** "Axially Chiral α -Boryl-Homoallyl Boronic Esters as a Versatile Toolbox for Accessing Centrally and Axially Chiral Molecules" *Nat. Commun.* **2024**, *15*, 9239.
55. Kim, G.; Kim, M.; Ryu, C.; Choi, J.; **Cho, S. H.*** "Anion-Mediated, Stereospecific Synthesis of Secondary and Tertiary Cyclopropylboronates from Chiral Epoxides and *gem*-Diborylalkanes" *Org. Lett.* **2023**, *25*, 4130.
54. Jung, Y.; Yoo, S. Y.; Jin, Y.; J. Yu; J. Yu; Park, Y.*; **Cho, S. H.*** "Iridium-Catalyzed Chemo-, Diastereo-, and Enantioselective Allyl-Allyl Coupling: Accessing All Four Stereoisomers of (*E*)-1-Boryl-Substituted 1,5-Dienes by Chirality Pairing" *Angew. Chem., Int. Ed.* **2023**, *62*, e202218794.
53. Jung, Y.; **Cho, S. H.*** "Chemo-, Regio-, and Stereoselective Access to (*E*)-Boryl-Substituted Allyl Fluorides via Electrophilic Fluorodesilylation" *Synlett* **2023**, *34*, 2165.
52. Han, S.; Lee, Y.; Jung, Y.; **Cho, S. H.*** "Stereoselective Access to Tetra- and Tri-substituted Fluoro- and Chloroborylalkenes via Boron-Wittig Reaction" *Angew. Chem., Int. Ed.* **2022**, *61*, e202210532.
51. Hwang, C.; Lee, Y.; Kim, M.; Seo, Y.; **Cho, S. H.*** "Diborylmethyl Group as a Transformable Building Block for the Diversification of Nitrogen-Containing Molecules" *Angew. Chem., Int. Ed.* **2022**, *61*, e202209079. (Selected as "Very Important Publication")
50. Ahn, Y.; Park, J.; Park, M.; Jin, S.; Jo, W.; Kim, J.; **Cho, S. H.**; Seo, D.* "Combinatorial selective synthesis and excitation experiments for quantitative analysis of the effects of Au on a semiconductor photocatalyst" *Chem* **2022**, *8*, 2485.
49. Kim, H.; Jung, Y.; **Cho, S. H.*** "Defluorinative C-C Bond Forming Reaction of Trifluoromethyl Alkenes with (*gem*-Diborylalkyl)lithiums" *Org. Lett.* **2022**, *24*, 2705.
48. Lee, Y.; Han, S.; **Cho, S. H.*** "Catalytic Chemo and Enantioselective Transformations of *gem*-Diborylalkanes and (Diborylmethyl)metallic Species" *Acc. Chem. Res* **2021**, *54*, 3917.

47. Jo, W.; Lee, J. H.*; **Cho, S. H.*** "Advances in Transition Metal-Free Deborylative Transformations of gem-Diborylalkanes" *Chem. Commun.* **2021**, 27, 4346. (*Invited "Feature Article"*)
46. Kim, M.; Park, B.; Shin, M.; Kim, S.; Kim, J.; Baik, M.-H.*; **Cho, S. H.*** "Copper-Catalyzed Enantiotopic-Group-Selective Allylation of gem-Diborylalkanes" *J. Am. Chem. Soc.* **2021**, 143, 1069.
45. Park, J.; Jung, Y.; Kim, J.; Lee, E.; Lee, S. Y.; **Cho, S. H.*** "Kinetic Resolution of α -Silyl-Substituted Allylboronate Esters via Chemo- and Stereoselective Allylboration of Aldehydes" *Adv. Synth. Cat.* **2021**, 363, 1069. (*Special Issue on "Boron in Catalysis and Organic Synthesis"; Selected as "very important publication; Selected as "Front Cover"*)
44. Kim, M.; Lee, J.; **Cho, S. H.*** "Pd-Catalyzed Negishi Cross-Coupling of Vinyl Bromides with Diborylmethylzinc Chlorides" *Bull. Kor. Chem. Soc.* **2021**, 42, 199. (*Special Issue on "Chemical Synthesis & Reaction Development"*)
43. Jo, W.; Baek, S.; Hawng, C.; Heo, J.; Baik, M.-H.*; **Cho, S. H.*** "ZnMe₂-Mediated, Direct Alkylation of Electron Deficient N-Heteroarenes with 1,1-Diborylalkanes: Scope and Mechanism" *J. Am. Chem. Soc.* **2020**, 142, 13235.
42. Lim, S.; Cho, H.; Jeong, J.; Jang, M.; Kim, H.; **Cho, S. H.**; Lee, E.* "Cobalt-Catalyzed Defluorosilylation of Aryl Fluorides via Grignard Reagent Formation" *Org. Lett.* **2020**, 22, 7387.
41. Shin, M.; Kim, M.; Hwang, C.; Kwon, H.; Park, J.; Lee, E.; **Cho, S. H.*** "Facile Synthesis of α -Boryl-Substituted Allylboronate Esters Using Stable Bis[(pinacolato)boryl]methylzinc Reagents" *Org. Lett.* **2020**, 22, 2476.
40. Dutta, S.; Mumari, N.; Dubbu, S.; Jang, S. W.; Kumar, A.; Ohtsu, H.; Kim, J.; **Cho, S. H.**; Kawano, M.; Lee, I. S.* "Highly Mesoporous Metal-Organic Frameworks as Synergistic Multimodal Catalytic Platforms for Divergent Cascade Reactions" *Angew. Chem., Int. Ed.* **2020**, 59, 3416.
39. Kim, J.; Shin, M.; **Cho, S. H.*** "Copper-Catalyzed Diastereo- and Enantioselective Addition of 1,1-Diborylalkanes to Cyclic Ketimines and α -Imino Esters" *ACS Catal.* **2019**, 9, 8503.
38. Kim, J.; **Cho, S. H.*** "Chemoselective Palladium-Catalyzed Suzuki-Miyaura Cross-Coupling of (Diborylmethyl)silanes with Alkenyl Bromides" *Asian J. Org. Chem.* **2019**, 8, 1664. (*Invited Issue on "Researchers in Korea"*)
37. Kim, J.; Hwang, C.; Kim, Y.; **Cho, S. H.*** "Improved Synthesis of β -Aminoboronate Esters via Copper-Catalyzed Diastereo- and Enantioselective Addition of 1,1-Diborylalkanes to Acyclic Aryldimines" *Org. Process. Res. Dev.* **2019**, 23, 1663. (*Invited Issue on "Honoring 25 years of Buchwald-Hartwig Amination"*)

36. Lee, H.; Lee, Y.; **Cho, S. H.*** "Palladium-Catalyzed Chemoselective Negishi Cross-Coupling of Bis[(pinacolato)boryl]methyl Zinc Halides with Aryl (Pseudo)Halides" *Org. Lett.* **2019**, *21*, 5912.
35. Kim, J.; **Cho, S. H.*** "Access to Enantioenriched Benzylic 1,1-Silylboronate Esters by Palladium-Catalyzed Enantiotopic Group Selective Suzuki-Miyaura Coupling of (Diborylmethyl)silanes with Aryl Iodides" *ACS Catal.* **2019**, *9*, 230.
34. Lee, Y.; Park, J.; **Cho, S. H.*** "Generation and Application of (Diborylmethyl)zinc Halide: Synthesis of Enantioenriched *gem*-Diborylalkanes by an Asymmetric Allylic Substitution Reaction" *Angew. Chem., Int. Ed.* **2018**, *57*, 12930.
33. Singh, A.; Kim, M.-G.; Lee, H.-J.; Singh, R.; **Cho, S. H.**; Kim, D.-P. "Direct aryl-aryl coupling without pre-functionalization enabled by excessive oxidation of two-electron Ag(I)/Ag(III) catalyst" *Adv. Synth. Catal.* **2018**, *360*, 2032.
32. Park, J.; Choi, S.; Lee, Y.; **Cho, S. H.*** "Chemo- and Stereoselective Crotylation of Aldehydes and Cyclic Aldimines with Allylic *gem*-Diboroate Ester" *Org. Lett.* **2017**, *19*, 4054.
31. Kim, J.; Ko, K.; **Cho, S. H.*** "Diastereo- and Enantioselective Synthesis of β -Aminoboronate Esters by Copper(I)-Catalyzed 1,2-Addition of 1,1-Bis[(pinacolato)boryl]alkanes to Imines" *Angew. Chem., Int. Ed.* **2017**, *56*, 11584.
30. Hwang, C.; Jo, W.; **Cho, S. H.*** "Base-Promoted, Deborylative Secondary Alkylation of *N*-Heteroaromatic *N*-Oxides with Internal *gem*-Bis[(pinacolato)boryl]alkanes: A Facile Derivatization of 2,2'-Bipyridyl Analogues" *Chem. Commun.* **2017**, *53*, 7573.
29. Lee, Y.; Park, J.; Baek, S.-Y.; Kim, S. T.; Tussupbayev, S.; Kim, J.; Baik, M.-H.*; **Cho, S. H.*** "Chemoselective Coupling of 1,1-Bis[(pinacolato)boryl]alkanes for the Transition-Metal-Free Borylation of Aryl and Vinyl Halides: A Combined Experimental and Theoretical Investigation" *J. Am. Chem. Soc.* **2017**, *139*, 976.
28. Kim, J.; Kumar, A.; Lee, S. J.; Kim, J.; Lee, D.-G.; Kwon, T.; **Cho, S. H.**; Lee, I.* "Concave Silica Nanosphere with a Functionalized Open-Mouthed Cavity as Highly Active and Durable Catalytic Nanoreactor" *Chem. Mater.*, **2017**, *29*, 7785.
27. Kim, D.; Choi, J. K.; Kim, S. M.; Hwang, I.; Kii, J.; Choi, S.; **Cho, S. H.**; Kim, K.*; Lee, I. S.* "Confined Nucleation and Growth of PdO Nanocrystals in a Seed-Free Solution inside Hollow Nanoreactor" *ACS Appl. Mater. Interfaces*, **2017**, *9*, 29992.
26. Cho, Y. S.; Kim, S. M.; Ju, Y.; Kim, J.; Jeon, K.-W.; **Cho, S. H.**; Kim, J.; Lee, I. S.* "Spontaneous Pt Deposition on Defective Surfaces of In₂O₃ Nanocrystals Confined within Cavities of Hollow Silica Nanoshells: Pt Catalyst-Modified ITO Electrode with Enhanced ECL Performance" *ACS Appl. Mater. Interfaces*, **2017**, *9*, 20728.
25. Kim, J.; **Cho, S. H.*** "Recent Developments in the Direct Methylation of Electron Deficient *N*-Heteroarenes", *Synlett*, **2016**, *27*, 2525. (*Invited Synpact article*)

24. Jo, W.; Kim, J.; Choi, S.; **Cho, S. H.*** "Transition-Metal Free Regioselective Alkylation of Heterocyclic *N*-Oxides Using 1,1-Diborylalkanes as Alkylation Reagents", *Angew. Chem., Int. Ed.* **2016**, *55*, 9690.
23. Park, J.; Lee, Y.; Kim, J.; **Cho, S. H.*** "Copper-catalyzed Diastereoselective Addition of Diborylmethane to *N*-*tert*-Butansulfinyl Aldimines: Synthesis of β -Aminoboronates" *Org. Lett.*, **2016**, *18*, 1210.
22. Kim, J.; Park, S.; Park, J.; **Cho, S. H.*** "Synthesis of Alkylboronates by Copper-catalyzed Allylic Substitution of Allylic Chlorides with 1,1-Diborylalkanes" *Angew. Chem., Int. Ed.* **2016**, *55*, 1498.
21. Larsen, M.; **Cho, S. H.**; Hartwig, J. F. "Iridium-Catalyzed, Hydrosilyl-Directed Borylation of Unactivated Alkyl C-H Bonds" *J. Am. Chem. Soc.* **2016**, *138*, 762.

**BEFORE
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20. **Cho, S. H.**; Hartwig, J. F.* "Iridium-catalyzed Bisborylation Reaction for the Synthesis of 1,1-Benzylidiboronate Esters" *Chem. Sci.* **2014**, *5*, 694.
19. **Cho, S. H.**; Hartwig, J. F.* "Iridium-catalyzed Borylation of Secondary Benzylic C-H Bonds Directed by Hydrosilane" *J. Am. Chem. Soc.* **2013**, *135*, 8157.
18. Kim, J. Y.; Park, S.; Ryu, J.; **Cho, S. H.**; Kim, S. H.; Chang, S.* "Rhodium-Catalyzed Intermolecular Amidation of Arenes with Sulfonyl Azides via Chelation-Assisted C-H bond" *J. Am. Chem. Soc.* **2012**, *134*, 9110.
17. Ryu, J.; **Cho, S. H.***; Chang, S.* "A Versatile Rh(I) Catalyst System Enabling the Addition of Heteroarenes to both Alkenes and Alkynes via C-H Bond Activation Pathway", *Angew. Chem., Int. Ed.* **2012**, *51*, 3677. (**Co-corresponding authors*)
16. Kim, H. J.; **Cho, S. H.**; Chang, S.* "A Intramolecular Oxidative Diamination and Aminohydroxylation of Olefins under Metal-Free Conditions" *Org. Lett.* **2012**, *14*, 1424.
15. Kim, H. J.; Kim, J.; **Cho, S. H.***; Chang, S.* "Intermolecular Oxidative C-N Bond Formation under Metal-Free Conditions: Control of Chemoselectivity between Aryl sp^2 and Benzylic sp^3 C-H Bond Imidation" *J. Am. Chem. Soc.* **2011**, *133*, 16382. (**Co-corresponding authors*)
14. **Cho, S. H.**; J. Y. Kim, J. Kwak, Chang, S.* "Recent Advances in the Transition Metal-Catalyzed Twofold Oxidative C-H Bond Activation Strategy for C-C and C-N Bond Formation" *Chem. Soc. Rev.* **2011**, *40*, 5068.
13. **Cho, S. H.**; Yoon, J.; Chang, S.* "Intramolecular Oxidative C-N Bond Forming Reaction for the Synthesis of Carbazoles: Comparison of Reactivity between the Cu-Catalyzed and Metal-Free Conditions" *J. Am. Chem. Soc.* **2011**, *133*, 5996.
12. Kim, J. Y.; **Cho, S. H.**; Joseph, J.; Chang, S.* "Cobalt- and Manganese-Catalyzed Direct Amination of Azoles under Highly Mild Conditions" *Angew. Chem., Int. Ed.* **2010**, *49*, 9899.
11. **Cho, S. H.**; Kim, J. Y.; Lee, S. Y.; Chang, S.* "Silver-Mediated Direct Amination of Benzoxazoles: Tuning the Amino Group Source from Formamides to Parents Amines" *Angew. Chem., Int. Ed.* **2009**, *48*, 9127.

10. Hwang, S. J.; **Cho, S. H.**; Chang, S.* "Synthesis of Condensed Pyrroloindoles via Pd-Catalyzed Intramolecular C–H Bond Functionalization of Pyrroles" *J. Am. Chem. Soc.* **2008**, *130*, 16158.
9. **Cho, S. H.**; Hwang, S. J.; Chang, S.* "Palladium-Catalyzed C–H Functionalization of Pyridine N-Oxides: Highly Selective Alkenylation and Direct Arylation with Unactivated Arenes" *J. Am. Chem. Soc.* **2008**, *130*, 9254.
8. Lee, J. M.; Park, E. J.; **Cho, S. H.**; Chang, S.* "Cu-Facilitated C–O Bond Formation Using N-Hydroxyphthalimide: Efficient and Selective Functionalization of Benzyl- and Allylic C–H Bonds", *J. Am. Chem. Soc.* **2008**, *130*, 7824.
7. Hwang, S. J.; **Cho, S. H.**; Chang, S.* "Evaluation of Catalytic Activity of Copper Salts and their Removal Processes in the Three-Component Coupling Reactions" *Pure Appl. Chem.* **2008**, *80* (5), 873.
6. **Cho, S. H.**; Chang, S.* "Room Temperature Copper-Catalyzed 2-Functionalization of Pyrrole Rings by a Three-Component Coupling Reaction" *Angew. Chem., Int. Ed.* **2008**, *47*, 2836.
5. **Cho, S. H.**; Hwang, S. J.; Chang, S.* "Copper-Catalyzed Three-Component Reaction of 1-Alkynes, Sulfonyl Azides, and Water: N-(4-Acetamidophenylsulfonyl)-2-phenylacetamide" *Organic Syntheses* **2008**, *85*, 131.
4. **Cho, S. H.**; Chang, S.* "Rate-Accelerated Nonconventional Amide Synthesis in Water: A Practical Catalytic Aldol-Surrogate Reaction" *Angew. Chem., Int. Ed.* **2007**, *46*, 1897.
3. Chang, S.*; Lee, M. J.; Jung, D. Y.; Yoo, E. J.; **Cho, S. H.**; Han, S. K. "Catalytic One-Pot Synthesis of Cyclic Amidines by Virtue of Tandem Reactions Involving Intramolecular Hydroamination Under Mild Conditions" *J. Am. Chem. Soc.* **2006**, *128*, 12366.
2. Yoo, E. J.; Bae I.; **Cho, S. H.**; Han, H.; Chang, S.* "A Facile Access to N-Sulfonylimidates and their Synthetic Utility for the Transformations to Amidines and Amides" *Org. Lett.* **2006**, *8*, 1347.
1. **Cho, S. H.**; Yoo, E. J.; Bae I.; Chang, S.* "Copper-Catalyzed Hydrative Amide Synthesis with Terminal Alkyne, Sulfonyl Azide, and Water" *J. Am. Chem. Soc.* **2005**, *127*, 16046.

PATENTS

5. **Cho, S. H.**; Kim, J.; Jo, W. "Regioselective alkylation method of heterocyclic-N-oxides using 1,1-diborylalkane compounds" (*Korea Patent* 10-1819824)
4. Chang, S.; **Cho, S. H.**; Kim, H. J.; Kim, J. Y. "Manufacturing method for imide compound using iodobenzene diacetate" (*Korea Patent* 10-2013-032561)
3. Chang, S.; **Cho, S. H.**; Yoo E. J.; Bae, I. "Preparation process of N-sulfonylamide using copper catalyst" (*Korea Patent* 10-2006-003248)
2. Chang, S.; **Cho, S. H.** "Preparation process of N-sulfonyl iminium heterocycle and bezocycle derivatives using copper catalyst" (*Korea Patent* 10-2008-0008002)

1. Chang, S.; Cho, S. H.; Kim, J. Y. "Process for the preparation of 2-amino benzazoles using oxidant and acid" (*Korea Patent 10-2009-0086513*)